



# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 22077 PC 1		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IB99/02021	International filing date (day/month/year) 17/12/1999	Priority date (day/month/year) 17/12/1998	
International Patent Classification (IPC) or national classification and IPC H05B6/80			
Applicant PERSONAL CHEMISTRY I UPPSALA AB et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 4 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input checked="" type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul>			
Date of submission of the demand  14/07/2000		Date of completion of this report  04.04.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer  Gols, J  Telephone No. +49 89 2399 2616 	

INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

International application No. PCT/IB99/02021

I. Basis of the report

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

Description, pages:

1-28 as originally filed

Claims, No.:

1-20 as received on 07/02/2000 with letter of 05/02/2000

Drawings, sheets:

1/6-6/6 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

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☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.  
☐ paid additional fees.  
☐ paid additional fees under protest.  
☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.  
☒ not complied with for the following reasons:  
see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.  
☒ the parts relating to claims Nos. 1-11,15-20.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-11,15-20
	No: Claims
Inventive step (IS)	Yes: Claims 1-11,15-20
	No: Claims

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/IB99/02021

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Industrial applicability (IA)    Yes:    Claims    1-11,15-20  
   No:    Claims

2. Citations and explanations  
see separate sheet

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
see separate sheet

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
see separate sheet

IV

1. The subject-matter of independent claim 12 relates to a method of performing a chemical reaction wherein a sample is provided in an applicator (step a). In the following steps (b - e) the sample is subjected to electromagnetic radiation pulses. The radiation is stopped when difference between pulses reflected by the sample is within a predetermined range. The feature in step a is known. The requisite unity of invention (Rule 13.1 PCT) therefore no longer exists inasmuch as a technical relationship involving one or more of the same or corresponding special technical features in the sense of Rule 13.2 PCT does not exist between the subject-matter of independent claim 12 as defined in steps b - e and the subject-matter of independent claims 1 and 15

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1. Claim 1:

**Technical field:** An apparatus for providing electromagnetic radiation to a plurality of applicators.

**Prior art:** Six X-documents have been cited in the ESR. US-A-5 511 238 and US-A-4 625 182 were considered of particular relevance to claim 1 as originally filed. Both documents disclose a single solid state microwave generator/applicator. US-A-5 796 080, FR-A-2 751 830 and DE-A-19 700 499 were considered of particular relevance to claim 15 as originally filed. US-A-5 796 080 discloses a single microwave generating means which comprises guiding means for guiding the generated microwaves to a plurality of applicators. FR-A-2 751 830 and DE-A-19 700 499 disclose a single microwave generator coupled to a single cavity. US-A-5 648 038 was considered of particular relevance to claim 21 as originally filed. The document discloses a single variable microwave generator which is coupled to a single cavity. The remaining A-documents do not provide further relevant information.

**Problem:** To provide an apparatus providing electromagnetic radiation to each of a plurality of samples in an independent manner.

**Solution:** Independent claim 1 comprises an apparatus for providing

electromagnetic radiation to a plurality of applicators, each of said plurality of applicators being adapted to hold a reaction vessel containing a sample to be exposed to electromagnetic radiation, the apparatus comprising a plurality of means for generating waves of electromagnetic radiation, guiding means for guiding the electromagnetic radiation to at least one applicator of the plurality of applicators, and controlling means for individually controlling the plurality of generating means in response to a control signal, said control signal reflecting the status of a sample in an applicator.

**Inventive step:** The problem is not addressed in the prior art presently available. None of these prior art documents teaches the above-mentioned solution. On the one hand it is taught to use a single microwave source which generates microwaves at variable frequencies, the source being coupled to a single applicator with a reaction vessel. On the other hand it is taught to use a plurality of sample holders in an applicator in combination with a microwave generator generating microwaves at a single frequency. The solution offers the advantage that, contrary to the devices as disclosed in the prior art as presently available, parallel treatment (e.g. heating) of a plurality of samples using different treatment parameters is possible, wherein the status of each sample can be individually monitored during the treatment. Consequently claim 1 meets the requirements of Articles 33(2) - (4) EPC.

2. Claims: 2 - 11:

These dependent claims are related to embodiments of the invention as set out in the independent claim 1 and as such meet the requirements of Article 33(2) - (4) PCT.

3. Claim 15:

The claim relates to a method of performing a plurality of chemical reactions simultaneously comprising the steps of providing a first sample into a first applicator, providing a second sample into a second applicator, applying electromagnetic radiation to the first sample in the first applicator from a first generating means, said first generating means being capable of generating electromagnetic radiation at a plurality of frequencies, applying electromagnetic

radiation to the second sample in the second applicator from a second generating means, said second generating means being capable of generating electromagnetic radiation at a plurality of frequencies, and individually controlling the electromagnetic radiation applied to the first and second applicators by individually and independently controlling the first and second generating means in response to control signals from the first and second applicators.

**Inventive step:** See point 1 above. There is no teaching in the prior art as presently available which leads to the method as claimed. The claimed method has the advantage that, contrary to the methods as disclosed in the prior art as presently available, parallel microwave treatment of the first and second samples can be performed and that the applying of the electromagnetic radiation to each of the samples is individually and independently controlled. Consequently claim 15 meets the requirements of Articles 33(2) - (4) EPC.

4. Claims 16 - 20:

These dependent claims are related to embodiments of the invention as set out in independent claim 15 and as such meet the requirements of Article 33(2) - (4) PCT.

VII

1. To meet the requirements of Rule 5.1(a)(ii) PCT, the documents US-A-5 796 080 and US-A-5 648 038 should have been identified in the description and the relevant background art disclosed therein should have been briefly discussed.
2. The description has not been made in conformity with the claims as required by Rule 5.1(a)(iii) PCT.

VIII

**EXAMINATION REPORT - SEPARATE SHEET**

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1. Claim 1:
  - a. The claim does not only define the apparatus itself but also specifies its relationship to the plurality of applicators (see, e.g. claim 5). In order to clarify the intended limitations in claim 1, it should have been clarified that the applicators are part of the claimed subject-matter.
  - b. It is not clear which applicator is meant under c (cf. an applicator) and it should have been made clear that this applicator relates to the first and/or second applicator.
2. Claim 15:
  - a. The wording "a method of performing a plurality of chemical reactions simultaneously" is not clear. It should have been explained (e.g. in step e) that in the method the chemical reactions are simultaneously performed for the first and second samples.
  - b. In order to prevent any accidental overlap between some prior art method, claim 15 should have clarified that the method is performed by an apparatus according to claim 1. In the present case the wording is such that it appears that the method as claimed could be read on two separate methods for microwave treatment of two separate samples, each method being performed independent of the other by means of two separate apparatuses (a similar remark appears valid for claim 1 as well, the claim could be read on two devices each device functioning independent of the other one).
3. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).



## AMENDED CLAIMS

1. An apparatus for providing electromagnetic radiation to a plurality of applicators, each of said plurality of applicators being adapted to hold a reaction vessel containing a sample  
5 to be exposed to electromagnetic radiation while said reaction vessel is positioned in one of the plurality of applicators, said apparatus comprising:
- a) a plurality of generating means for generating waves of electromagnetic radiation,  
each of said plurality of generating means being capable of generating  
10 electromagnetic radiation at a plurality of frequencies,
  - b) guiding means for guiding at least part of a generated wave of electromagnetic radiation to at least one applicator of the plurality of applicators, and
  - 15 c) controlling means for individually controlling the plurality of generating means in response to a control signal, said control signal reflecting the status of a sample in an applicator.
2. An apparatus according to claim 1, wherein a number of the plurality of generating  
20 means uses semiconductor components in the generation of the waves of electromagnetic radiation.
3. An apparatus according to claim 1 or 2, wherein each of the plurality of generating means comprises a signal generator and a signal amplifier.
- 25 4. An apparatus according any of claims 1-3, wherein the guiding means comprises switching means for individually controlling wave paths between the plurality of generating means and the plurality of applicators.
- 30 5. An apparatus according to any of the preceding claims, wherein the plurality of applicators are selected from the group consisting of near-field, surface-field, single-mode or multi-mode applicators.

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6. An apparatus according to any of claims 2-5, wherein the semiconductor components used in the generation of the waves of electromagnetic comprise silicon-carbide power transistors.
- 5 7. An apparatus according to any of the preceding claims, wherein the power of the electromagnetic radiation generated by a given generating means varies according to a second control signal from that applicator receiving the electromagnetic radiation generated by the given generating means, said second control signal being provided via the controlling means.
- 10 8. An apparatus according any of the preceding claims, wherein the plurality of generating means generate electromagnetic radiation at essentially the same frequency.
9. An apparatus according to any of claims 1-7, wherein the frequency of the  
15 electromagnetic radiation generated by a given generating means varies according to a first control signal from that applicator receiving the electromagnetic radiation generated by the given generating means, said first control signal being provided via the controlling means.
- 20 10. An apparatus according to any of the preceding claims, wherein the frequencies of the electromagnetic radiation generated by the plurality of generating means are within the range 300 MHz-300 GHz, such as within the range 0,5-3 GHz or within the range 50-100 GHz.
- 25 11. An apparatus according to any of the preceding claims, wherein the controlling means comprises a general purpose computer.
12. A method of performing a chemical reaction, said method comprising the steps of:
- 30 a) providing a sample in an applicator,
- b) applying electromagnetic radiation to the sample in form of a first pulse with a predetermined shape and characterising a reflected pulse from the applicator by performing a mathematical operation so as to obtain a first reflected spectrum,
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- c) changing the physical and/or chemical properties of the sample,
- d) applying electromagnetic radiation to the sample in form of a second pulse with a predetermined shape and characterising a reflected pulse from the applicator by performing a mathematical operation so as to obtain a second reflected spectrum,
- e) repeating step c) and d) until the difference between the first and second reflected spectra calculated as the mathematical difference (subtraction) between the first and second spectra is within a predetermined range.

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13. A method according to claim 12, wherein the mathematical operation for obtaining the first and second reflection spectra comprise Fourier Transformation.

14. A method according to claim 12 or 13, wherein the reaction is conducted in an apparatus according to any of claims 1-11.

15. A method of performing a plurality of chemical reactions simultaneously, said method comprising the steps of:

a) providing a first sample into a first applicator,

b) providing a second sample into a second applicator,

c) applying electromagnetic radiation to the first sample in the first applicator from a first generating means, said first generating means being capable of generating electromagnetic radiation at a plurality of frequencies,

d) applying electromagnetic radiation to the second sample in the second applicator from a second generating means, said second generating means being capable of generating electromagnetic radiation at a plurality of frequencies, and

e) individually controlling the electromagnetic radiation applied to the first and second applicator by individually and independently controlling the first and second generating means in response to control signals from the first and second applicators.

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16. A method according to claim 15, wherein the applied electromagnetic radiation is within the range 300 MHz-300 GHz.
17. A method according to claim 15 or 16, wherein the electromagnetic radiation applied to the first and second sample have essentially the same frequency and essentially the same power level so as to expose the first and second sample to essentially the same conditions.
18. A method according to any of claims 15-17, wherein the first and second samples are PCR mixtures.
19. A method according to any of claims 15-18, wherein the electromagnetic radiation is applied to the samples in cycles of at least two steps where the samples are cooled at least during a part of each cycle.
20. A method according to any of claims 15-19, wherein the electromagnetic radiation is provided by an apparatus according to any of claims 1-11.

# PCT

## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum) 22077 PC 1

### Box No. I TITLE OF INVENTION

Microwave apparatus and methods of performing chemical reactions

### Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Labwell AB  
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Sweden

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:  
Sweden

State (that is, country) of residence:  
Sweden

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

### Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

FAGRELL, Magnus  
Nordhemsvägen 7A  
756 46 Uppsala  
Sweden

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:  
Sweden

State (that is, country) of residence:  
Sweden

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

### Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent ☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Plougmann, Vingtoft & Partners A/S  
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P.O. Box 3007  
1021 Copenhagen K  
Denmark

Telephone No.

+45 33 63 93 00

Facsimile No.

+45 33 63 96 00

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

## Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

## Regional Patent

- ☒ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line) .....

## National Patent (if other kind of protection or treatment desired, specify on dotted line):

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> AE United Arab Emirates                  | <input checked="" type="checkbox"/> LR Liberia   |   |
| <input checked="" type="checkbox"/> AL Albania                               | <input checked="" type="checkbox"/> LS Lesotho   |   |
| <input checked="" type="checkbox"/> AM Armenia                               | <input checked="" type="checkbox"/> LT Lithuania   |   |
| <input checked="" type="checkbox"/> AT Austria and utility model             | <input checked="" type="checkbox"/> LU Luxembourg  |   |
| <input checked="" type="checkbox"/> AU Australia                             | <input checked="" type="checkbox"/> LV Latvia  |   |
| <input checked="" type="checkbox"/> AZ Azerbaijan                            | <input checked="" type="checkbox"/> MD Republic of Moldova   |   |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina                | <input checked="" type="checkbox"/> MG Madagascar  |   |
| <input checked="" type="checkbox"/> BB Barbados                              | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia                             |   |
| <input checked="" type="checkbox"/> BG Bulgaria                              |  |   |
| <input checked="" type="checkbox"/> BR Brazil                                | <input checked="" type="checkbox"/> MN Mongolia  |   |
| <input checked="" type="checkbox"/> BY Belarus                               | <input checked="" type="checkbox"/> MW Malawi  |   |
| <input checked="" type="checkbox"/> CA Canada                                | <input checked="" type="checkbox"/> MX Mexico  |   |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein  | <input checked="" type="checkbox"/> NO Norway  |   |
| <input checked="" type="checkbox"/> CN China                                 | <input checked="" type="checkbox"/> NZ New Zealand   |   |
| <input checked="" type="checkbox"/> CU Cuba                                  | <input checked="" type="checkbox"/> PL Poland  |   |
| <input checked="" type="checkbox"/> CZ Czech Republic and utility model      | <input checked="" type="checkbox"/> PT Portugal  |   |
| <input checked="" type="checkbox"/> DE Germany and utility model             | <input checked="" type="checkbox"/> RO Romania   |   |
| <input checked="" type="checkbox"/> DK Denmark and utility model             | <input checked="" type="checkbox"/> RU Russian Federation  |   |
| <input checked="" type="checkbox"/> EE Estonia and utility model             | <input checked="" type="checkbox"/> SD Sudan   |   |
| <input checked="" type="checkbox"/> ES Spain                                 | <input checked="" type="checkbox"/> SE Sweden  |   |
| <input checked="" type="checkbox"/> FI Finland and utility model             | <input checked="" type="checkbox"/> SG Singapore   |   |
| <input checked="" type="checkbox"/> GB United Kingdom                        | <input checked="" type="checkbox"/> SI Slovenia  |   |
| <input checked="" type="checkbox"/> GD Grenada                               | <input checked="" type="checkbox"/> SK Slovakia and utility model  |   |
| <input checked="" type="checkbox"/> GE Georgia                               | <input checked="" type="checkbox"/> SL Sierra Leone  |   |
| <input checked="" type="checkbox"/> GH Ghana                                 | <input checked="" type="checkbox"/> TJ Tajikistan  |   |
| <input checked="" type="checkbox"/> GM Gambia                                | <input checked="" type="checkbox"/> TM Turkmenistan  |   |
| <input checked="" type="checkbox"/> HR Croatia                               | <input checked="" type="checkbox"/> TR Turkey  |   |
| <input checked="" type="checkbox"/> HU Hungary                               | <input checked="" type="checkbox"/> TT Trinidad and Tobago   |   |
| <input checked="" type="checkbox"/> ID Indonesia                             | <input checked="" type="checkbox"/> UA Ukraine   |   |
| <input checked="" type="checkbox"/> IL Israel                                | <input checked="" type="checkbox"/> UG Uganda  |   |
| <input checked="" type="checkbox"/> IN India                                 | <input checked="" type="checkbox"/> US United States of America  |   |
| <input checked="" type="checkbox"/> IS Iceland                               |  |   |
| <input checked="" type="checkbox"/> JP Japan                                 | <input checked="" type="checkbox"/> UZ Uzbekistan  |   |
| <input checked="" type="checkbox"/> KE Kenya                                 | <input checked="" type="checkbox"/> VN Viet Nam  |   |
| <input checked="" type="checkbox"/> KG Kyrgyzstan                            | <input checked="" type="checkbox"/> YU Yugoslavia  |   |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | <input checked="" type="checkbox"/> ZA South Africa  |   |
|  | <input checked="" type="checkbox"/> ZW Zimbabwe  |   |
| <input checked="" type="checkbox"/> KR Republic of Korea and utility model   | Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet: |   |
| <input checked="" type="checkbox"/> KZ Kazakhstan                            | <input checked="" type="checkbox"/> DM Dominica  | <input checked="" type="checkbox"/> MA Morocco  |
| <input checked="" type="checkbox"/> LC Saint Lucia                           | <input checked="" type="checkbox"/> CR Costa Rica  | <input checked="" type="checkbox"/> TZ Tanzania |
| <input checked="" type="checkbox"/> LK Sri Lanka                             |  |   |

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM				
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) 17 December 1998 (17.12.98)	PA 1998 01669	DK		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): 1)

\* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

### Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / EP

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

### Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 3  
description (excluding sequence listing part) : 28  
claims : 6  
abstract : 1  
drawings : 6  
sequence listing part of description :  
Total number of sheets : 44

This international application is accompanied by the item(s) marked below:

1. ☐ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☐ other (specify):

Figure of the drawings which should accompany the abstract:

Language of filing of the international application: English

### Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Copenhagen, 17 December 1999

Plougmann, Vingtoft & Partners A/S

  
Gert Høy Jakobsen

For receiving Office use only		2. Drawings:  <input type="checkbox"/> received:  <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:		
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

Date of receipt of the record copy by the International Bureau:

For International Bureau use only